

REMARKS

Claims 1, 3, 6-12, 14, 15 and 18-25 are pending.

Claims 1, 3, 6-12, 14, 15 and 18-25 stand rejected.

Claims 3, 6, 7 and 14 have been canceled, without prejudice.

Claims 1, 8, 10, 12, 15, 21 and 23 have been amended. Support for these amendments can be found throughout the specification and drawings, as originally filed.

This Amendment is submitted in response to a Final Office Action. The Applicants submit that this Amendment places the application in a condition for allowance, or alternatively, in better form for appeal.

35 USC §112, FIRST PARAGRAPH REJECTION

Claims 1, 3, 6-12, 14, 15 and 18-25 stand rejected under 35 U.S.C. §112, first paragraph. More specifically, the Examiner asserted that the specification, while being enabling for a homogeneous solution (single phase liquid phase) of C-PVC, a salt of an alkali metal and an aprotic solvent, does not reasonably provide enablement for a single phase polymer electrolyte material (single solid phase or single gas phase) of C-PVC, a salt of an alkali metal and an aprotic solvent.

The Applicants respectfully traverse the 35 U.S.C. §112, first paragraph rejection of claims 1, 3, 6-12, 14, 15 and 18-25. The Applicants note that claims 3, 6 and 7 have been canceled and the language thereof substantially incorporated into independent claim 1. The Applicants also note that claim 14 has been canceled and the language thereof substantially incorporated into independent claim 12.

In the interests of expediting prosecution of the instant application, and without admission that any amendment is required, the Applicants have amended claims 1 and 12 to remove the allegedly non-enabling language contained therein, i.e., more specifically, the recitation of “a single phase material” has been deleted. The instant specification contains ample support for the presently recited solid polymer electrolyte, especially in the Examples (e.g., see Examples 4-6), which state that the homogeneous solution is cast onto a support and that the resulting film is dried for at least 72 hours. This certainly produces the solid polymer electrolyte of the claimed invention.

Accordingly, the Applicants contend that the 35 U.S.C. §112, first paragraph rejection of claims 1, 8-12, 15 and 18-25 has been overcome.

35 USC §112, SECOND PARAGRAPH REJECTION

Claims 1, 3, 6-12, 14, 15 and 18-25 stand rejected under 35 U.S.C. §112, second paragraph. More specifically, the Examiner asserted that claims 1 and 12 recite the term “a single phase material”, which is indefinite.

The Applicants respectfully traverse the 35 U.S.C. §112, second paragraph rejection of claims 1, 3, 6-12, 14, 15 and 18-25. The Applicants note that claims 3, 6 and 7 have been canceled and the language thereof substantially incorporated into independent claim 1. The Applicants also note that claim 14 has been canceled and the language thereof substantially incorporated into independent claim 12.

In the interests of expediting prosecution of the instant application, and without admission that any amendment is required, the Applicants have amended claims 1 and 12 to remove the allegedly indefinite language contained therein, i.e., more specifically,

the recitation of “a single phase material” has been deleted. The instant specification contains ample support for the presently recited solid polymer electrolyte, especially in the Examples (e.g., see Examples 4-6), which state that the homogeneous solution is cast onto a support and that the resulting film is dried for at least 72 hours. This certainly produces the solid polymer electrolyte of the claimed invention.

Accordingly, the Applicants contend that the 35 U.S.C. §112, second paragraph rejection of claims 1, 8-12, 15 and 18-25 has been overcome.

35 USC §102(e)/103(a) REJECTION

Claims 1, 3, 6, 8, 10, 12, 14, 15 and 18-22 stand rejected under 35 U.S.C. §102(e)/103(a) as being anticipated by, and alternatively unpatentable over, U.S. Patent No. 6,617,078 to Chia et al.

The Applicants respectfully traverse the 35 U.S.C. §102(e)/103(a) rejection of claims 1, 3, 6, 8, 10, 12, 14, 15 and 18-22. The Applicants note that claims 3, 6 and 7 have been canceled and the language thereof substantially incorporated into independent claim 1. The Applicants also note that claim 14 has been canceled and the language thereof substantially incorporated into independent claim 12.

The law is clear that a person shall be entitled to a patent unless the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this

subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language. 35 U.S.C. §102(e).

The standard for obviousness is that there must be some suggestion, either in the reference or in the relevant art, of how to modify what is disclosed to arrive at the claimed invention. In addition, "[s]omething in the prior art as a whole must suggest the desirability and, thus, the obviousness, of making" the modification to the art suggested by the Examiner. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 U.S.P.Q.2d (BNA) 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988). Although the Examiner may suggest the teachings of a primary reference could be modified to arrive at the claimed subject matter, the modification is not obvious unless the prior art also suggests the desirability of such modification. *In re Laskowski*, 871 F.2d 115, 117, 10 U.S.P.Q.2d (BNA) 1397, 1398 (Fed. Cir.1989). There must be a teaching in the prior art for the proposed combination or modification to be proper. *In re Newell*, 891 F.2d 899, 13 U.S.P.Q.2d (BNA) 1248 (Fed. Cir. 1989). If the prior art fails to provide this necessary teaching, suggestion, or incentive supporting the Examiner's suggested modification, the rejection based upon this suggested modification is error and must be reversed. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d (BNA) 1566 (Fed. Cir. 1990).

The law is also clear that a claim in dependent form shall be construed to incorporate all the limitations of the claim to which it refers. 35 U.S.C. 112, fourth paragraph.

In the interests of expediting prosecution of the instant application, and without admission that any amendment is required, the Applicants have amended claim 1 to

recite, among other things, a polymer electrolyte comprising: (1) a modified chlorine containing polymer having an enhanced chlorine level relative to a chlorine content of an unmodified chlorine containing polymer formed from polymerization of its monomer; (2) a salt of an alkali metal; and (3) an aprotic solvent; wherein said polymer electrolyte is a solid polymer electrolyte comprising said salt and said aprotic solvent integrated with said modified chlorine containing polymer; wherein said modified chlorine containing polymer comprises C-PVC, said C-PVC having 60-72 wt % chlorine; wherein said polymer electrolyte comprises 10-40 wt % of said C-PVC.

In the interests of expediting prosecution of the instant application, and without admission that any amendment is required, the Applicants have amended claim 12 to recite, among other things, a rechargeable battery, comprising: (1) an anode containing an alkali metal; (2) a cathode; and (3) a polymer electrolyte formed from a modified chlorine containing polymer having an enhanced chlorine level relative to a chlorine content of an unmodified chlorine containing polymer formed from polymerization of its monomer, a salt of an alkali metal, and an aprotic solvent; wherein said polymer electrolyte is a solid polymer electrolyte comprising said salt and said aprotic solvent integrated with said modified chlorine containing polymer; wherein said modified chlorine containing polymer comprises C-PVC, said C-PVC having 60-72 wt % chlorine; wherein said polymer electrolyte comprises 10-40 wt % of said C-PVC.

Chia et al. does not teach or suggest the invention as claimed in independent claims 1 and/or 12 or the claims dependent therefrom.

Specifically, Chia et al. fail to teach or suggest that the polymer electrolyte comprises 10-40 wt % of chlorinated polyvinylchloride (C-PVC). Thus, one of ordinary

skill in the art would not look to Chia et al. for guidance on making a polymer electrolyte and/or rechargeable battery, as presently claimed.

Because claim 1 is allowable over Chia et al. for at least the reasons stated above, claims 8, 10, and 12, which depend from and further define claim 1, are likewise allowable. Because claim 12 is allowable over Chia et al. for at least the reasons stated above, claims 15 and 18-22, which depend from and further define claim 12, are also likewise allowable.

Accordingly, the Applicants contend that the 35 U.S.C. 102(e)/103(a) rejection of claims 1, 8, 10, 12, 15 and 18-22 has been overcome.

35 USC §103(a) REJECTION

Claims 1, 3, 6-12, 14, 15 and 18-25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,252,413 to Alamgir et al. in view of U.S. Patent No. 5,389,463 to Chang et al., and/or in view of U.S. Patent No. 6,617,078 to Chia et al.

The Applicants respectfully traverse the 35 U.S.C. §103(a) rejection of claims 1, 3, 6-12, 14, 15 and 18-25. The Applicants note that claims 3, 6 and 7 have been canceled and the language thereof substantially incorporated into independent claim 1. The Applicants also note that claim 14 has been canceled and the language thereof substantially incorporated into independent claim 12.

As previously noted, independent claims 1 and 12 have been amended as set forth above.

Neither Alamgir et al., Chang et al., and/or Chia et al., either alone or in combination therewith, suggest the invention as claimed in independent claims 1 and/or 12 or the claims dependent therefrom.

The Examiner correctly noted that Alamgir et al. is silent with respect to the solid organic polymer matrix (separator) of the solid polymer electrolyte containing chlorinated PVC or a chlorinated PVC having 60-72 wt% chlorine.

The recitation of Chang et al. or Chia et al. does not cure the deficiencies in the teachings of Alamgir et al.

Initially, there is no motivation or suggestion that substituting a chlorinated PVC into the formulations taught by Alamgir et al. would even be functional, let alone desirable. Additionally, as the Examiner noted, Chang et al. discloses that the chlorine present in the polymer is at least in the amount of 55 percent. Furthermore, as the Examiner noted, Chia et al. discloses that the bound chlorine present in the polymer is at least in the amount of 57 percent. Thus, both Chang et al. and Chia et al. teach polymers containing extremely high levels of chlorine, whereas, as the Examiner has acknowledged, Alamgir et al. is completely silent on the subject of using chlorinated PVC, despite the fact that conventional PVC is clearly disclosed. Thus, one of ordinary skill in the art would not look to Alamgir et al., Chang et al., and/or Chia et al., either alone or in combination therewith, for guidance on making a polymer electrolyte and/or rechargeable battery, as presently claimed.

Because claim 1 is allowable over Alamgir et al., Chang et al., and/or Chia et al., either alone or in combination therewith, for at least the reasons stated above, claims 8-11, which depend from and further define claim 1, are likewise allowable. Because

claim 12 is allowable over Alamgir et al., Chang et al., and/or Chia et al., either alone or in combination therewith, for at least the reasons stated above, claims 15 and 18-25, which depend from and further define claim 12, are likewise allowable.

Accordingly, the Applicants contend that the 35 U.S.C. 102(e)/103(a) rejection of claims 1, 8-12, 15 and 18-25 has been overcome.

CONCLUSION

In view of the foregoing, the Applicants respectfully request reconsideration and reexamination of the Application. The Applicants respectfully submit that each item raised by Examiner in the Final Office Action of February 2, 2006 has been successfully traversed, overcome or rendered moot by this response. The Applicants respectfully submit that each of the claims in this Application is in condition for allowance and such allowance is earnestly solicited.

The Examiner is invited to telephone the Applicants' undersigned attorney at (248) 723-0487 if any unresolved matters remain.

Any needed extension of time is hereby requested with the filing of this document.

The Commissioner is authorized to charge any additional fees or credit any overpayment to Deposit Account No. 08-2789.

Respectfully submitted,

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